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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,583	10/07/2003	Selena Chan	INTEL1260-1(P14246X)	5278

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER	
GEISEL, KARA E	
ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/680,583	**Applicant(s)** CHAN ET AL.
	Examiner Kara E Geisel	**Art Unit** 2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2003*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.
  4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-30* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *07 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  a)☐ All b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
  Paper No(s)/Mail Date *1003*.
4) ☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed October 7th, 2003 has been fully considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 13-18, and 21-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Schlottig et al. (WO 00/08445).

In regards to claim 1, Schlottig discloses a method comprising providing a metal-coated, porous substrate (page 4, lines 26-31; page 5, lines 1-9; and page 8, lines 4-16), which is used to detect and/or identify one or more analytes on the substrate by using laser excitation and spectroscopy (page 1, lines 3-29). Although Schlottig does not specifically disclose that the substrate is exposed to a sample comprising one or more analytes, it is disclosed that the substrate is used to measure the concentration of the analytes, and it would be inherent to expose the substrate to a sample comprising one or more analytes in order to apply the analytes to the substrate, and so that the concentration of these analytes could be obtained.

In regards to claim 2, the substrate is a porous semiconductor substrate (page 5, lines 1-24).

In regards to claim 3, the substrate is selected from the group consisting of nanocrystalline silicon, single crystal silicon, polycrystalline silicon, amorphous silicon, and laser annealed silicon (page 5, lines 1-9).

In regards to claim 4, metal nanoparticles are added to the metal-coated porous substrate (pages 4-5, lines 26-37 and 1-9, respectively).

In regards to claims 5-6, the spectroscopy is surface enhanced Raman spectroscopy (page 5, lines 17-24).

In regards to claims 7-10 and 13-14, it would be up to the user to select what type of analyte is to be analyzed, and how the analyte is labeled with Raman labels.

In regards to claim 15, Schlottig discloses an apparatus comprising a metal-coated nanocrystalline porous silicon substrate (page 4, lines 26-31; page 5, lines 1-9; and page 8, lines 4-16), a laser and a Raman detector (page 1, lines 12-29; page 4, lines 1-5).

In regards to claims 16-17, the porous silicon is used as a sacrificial layer and replaced by a metal (page 10, lines 1-35).

In regards to claim 18, the apparatus further comprises metal nanoparticles (pages 4-5, lines 26-37 and 1-9, respectively).

In regards to claims 21-22, the metal-coated porous silicon substrate comprises a uniform metal layer that is at least 3 microns in depth (page 10, lines 6-31).

In regards to claim 23, Schlottig discloses a wafer comprising a layer of metal-coated nanocrystalline porous silicon (page 4, lines 26-31; page 5, lines 1-9; and page 8, lines 4-16).

In regards to claim 24, the metal coating comprises silver, gold, platinum, copper, and/or aluminum (page 5, lines 1-9).

In regards to claim 25, the Examiner notes that the claim limitation "the layer of metal-coated porous silicon comprises a plasma-oxidized, dip and decomposed porous silicon substrate" is drawn to a process of manufacturing, which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113).

In regards to claim 26, Schlottig discloses a method comprising providing a metal-coated, porous substrate (page 4, lines 26-31; page 5, lines 1-9; and page 8, lines 4-16), which is used to detect and/or identify one or more analytes on the substrate by using laser excitation and Raman spectroscopy (page 1, lines 3-29). Although Schlottig does not specifically disclose that the substrate is exposed to a sample comprising one or more analytes, it is disclosed that the substrate is used to measure the concentration of the analytes, and it would be inherent to expose the substrate to a sample comprising one or more analytes in order to apply the analytes to the substrate, and so that the concentration of these analytes could be obtained.

In regards to claim 27, the Examiner notes that the claim limitation "the metal-coated porous silicon comprises a plasma-oxidized, dip and decomposed porous silicon substrate" is drawn to a process of manufacturing, which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113).

In regards to claims 28-30, it would be up to the user to select what type of analyte is to be analyzed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlottig et al. (WO 00/08445), in view of Natan (US Pub 2002/0142480).

In regards to claims 11-12, Schlottig discloses the method as described above. Schlottig does not disclose attaching one or more capture molecules to the substrate. However, it is well known in the art to do so, so that the analyte of interest will bind with the substrate so that Raman spectroscopy can be performed to measure the analyte.

For example, Natan discloses attaching capture molecules, such as ligands to nanoparticles to bind an analyte of interest to the nanoparticle, and so that Raman spectroscopy can be performed on the analyte to measure its properties (page 5, ¶ 40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use capture molecules in Schlottig's method to bind an analyte of interest to the substrate in order to use Raman spectroscopy to measure the properties of the analyte.

Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlottig et al. (WO 00/08445), in view of Carrabba et al. (USPN 5,255,067) as cited by applicant.

In regards to claims 19-20, Schlottig discloses the apparatus as described above. Schlottig does not disclose a flow through cell operably coupled to the Raman detector, wherein flow passes through the substrate inside the flow through cell. However, this is very well known in the art, and it would be obvious to one of ordinary skill in the art to add a flow through cell if the analytes of interest were in a gas, and needed to be passed through the substrate to capture the analytes onto the substrate for analysis.

For example, Carrabba discloses a Raman spectroscopy device (fig. 7) comprising a laser (fig. 7, 32), a Raman detector (fig. 7, 60), a substrate (fig. 7, 42), and a flow through cell (fig. 7, 36, 38, 40, and 44), wherein flow passes through the substrate inside the flow through cell in order to capture analytes in the flow onto the substrate for analysis (columns 6-7, lines 47-68 and 1-30, respectively). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use this flow through cell in Schlottig's apparatus in order to analyze analytes in gas.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Farquharson et al. (USPN 6,623,977).

Farquharson discloses an apparatus comprising a metal-coated porous substrate, a laser, and a Raman detector.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J Toatley, Jr. can be reached on **571 272 2059**. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9306 for regular communications and 703 872 9306 for After Final communications.

F.L. Evans
Primary Examiner
Art Unit 2877

K.G.

KEG
July 22, 2004